

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended) A storage system comprising:

a first storage unit for storing ~~information-data~~ from a first server;

a second storage unit for storing the ~~information-data~~ stored in said first storage unit;

a storage controller being coupled with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit;

wherein when an instruction for splitting between said first and second storage units is received from said first server, said storage controller reports an end of the splitting to said first server before completing of copying from said first storage unit to said second storage unit, receives an instruction for backup from said second server during the copying from said first storage unit to said second storage unit, and then transfers data information to a backup device from said second storage unit after copy of ~~information-data~~ from said first storage unit to said second storage unit ends based on controlling by said storage controller,

wherein if an instruction for backup is issued from said second server after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed-up, and

wherein if differential data in said first storage unit remains to be backed-up, then said storage controller reflects the differential data in said

second storage unit and transfers backed-up data from said second storage unit to said backup device.

2. (currently amended) A storage system as set forth in claim 1, wherein information-data is transferred from said second storage unit to said backup device after copy of all information-data from said first storage unit to said second storage unit ends.

3. (currently amended) comprising:
a first storage unit for storing information from a first server;
a second storage unit for storing the information stored in said first storage unit;

a storage device connected with said first storage unit and with said second storage unit and with said first server and with a second server instructing said first server another storage device connected with said second storage unit; and

a storage controller being coupled with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit for controlling said storage devices,

wherein when an instruction for splitting is received from said first server, said storage controller reports an end of the splitting to said first server, receives an instruction for backup from said second server, and then transfers information to a backup device from said second storage unit after

copy of information from said first storage unit to said second storage unit
endsA storage system as set forth in claim 1, and

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said second information is stored from said first storage unit into said second storage unit and then said first information and said second information are transferred from said second storage unit to said backup device.

4. (currently amended) comprising:
a first storage unit for storing information from a first server;
a second storage unit for storing the information stored in said first
storage unit;
a storage device connected with said first storage unit and with said
second storage unit and with said first server and with a second server
instructing said first server another storage device connected with said
second storage unit; and
a storage controller being coupled with said first storage unit, said
second storage unit, said first server, and a second server, and being used to
control said first storage unit and said second storage unit for controlling said
storage devices,
wherein when an instruction for splitting is received from said first
server, said storage controller reports an end of the splitting to said first
server, receives an instruction for backup from said second server, and then
transfers information to a backup device from said second storage unit after

copy of information from said first storage unit to said second storage unit
endsA storage system as set forth in claim 1, and

wherein when said storage controller receives a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is stored from said second storage unit into a memory that is connected with said storage controller and acts to store information and said second information is stored from said first storage unit into said memory, and then said first information and said second information stored in said memory are transferred to said backup device.

5. (currently amended) A backup method for a storage system having a first storage unit for storing information-data from a first server, a second storage unit for storing the information-data stored in said first storage unit, and a storage controller being connected with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit, wherein said method comprising the steps of:

causing said first server to issue an instruction for splitting between said first and second storage units to said storage controller; then causing said storage controller to report an end of the splitting to said first server before completing of copying from said first storage unit to said second storage unit; and

then, when an instruction for backup is received from said second server during the copying from said first storage unit to said second storage

unit, transferring information-data from said second storage unit to a backup device after the end of copy of the information-data from said first storage unit to said second storage unit based on controlling by said storage controller,

wherein if an instruction for backup is issued from said second server after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed up, and

wherein if differential data in said first storage unit remains to be backed up, then said storage controller reflects the differential data in said second storage unit and transfers backed up data from said second storage unit to said back-up device.

6. (currently amended) A backup method as set forth in claim 5, wherein when there is a request from said second server for transfer of information-data stored in said second storage unit to the backup device, the information-data is transferred to said backup device from said second storage unit after end of copy of the whole information-data into said second storage unit from said first storage unit.

7. (currently amended) A backup method as set forth in claim 5 for a storage system having a first storage unit for storing information from a first server, a second storage unit for storing the information stored in said first storage unit, a storage device connected with said first storage unit and with said second storage unit and connected with said first server and with a second server instructing said first server, and a storage controller being connected with said first storage unit, said second storage unit, said first

server, and a second server, and being used to control said first storage unit and said second storage unit for controlling said storage device, wherein said method comprising the steps of:

causing said first server to issue an instruction for splitting to said storage controller;

then causing said storage controller to report end of the splitting to said first server; and

then, when an instruction for backup is received from said second server, transferring information from said second storage unit to a backup device after end of copy of the information from said first storage unit to said second storage unit,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said second information is stored from said first storage unit into said second storage unit, and said first information and said second information are transferred from said second storage unit to said backup device.

8. (currently amended) A backup method for a storage system having a first storage unit for storing information from a first server, a second storage unit for storing the information stored in said first storage unit, a storage device connected with said first storage unit and with said second storage unit and connected with said first server and with a second server instructing said first server, and a storage controller being connected with said first storage unit, said second storage unit, said first server, and a second

server, and being used to control said first storage unit and said second storage unit for controlling said storage device, wherein said method comprising the steps of:

causing said first server to issue an instruction for splitting to said storage controller;

then causing said storage controller to report end of the splitting to said first server; and

then, when an instruction for backup is received from said second server, transferring information from said second storage unit to a backup device after end of copy of the information from said first storage unit to said second storage unit as set forth in claim 5,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is copied from said second storage unit into a memory that is connected with said storage controller and acts to store information and said second information is copied from said first storage unit into said memory, and said first information and said second information stored in said memory are transferred to said backup device.

9. (currently amended) A backup system comprising:

servers for storing informationdata;

a first storage unit for storing informationdata from said servers;

a second storage unit for copying the informationdata stored in said first storage unit; and

a storage controller connected with said servers, said first storage unit, and said second storage unit and controlling said first and second storage units;

wherein when said storage controller receives an instruction for splitting between said first and second storage units from said servers, an end of splitting is reported to said servers before completing of copying from said first storage unit to said second storage unit, an instruction for backup is received from said servers during the copying from said first storage unit to said second storage unit, then information data is copied from said first storage unit into said second storage unit, and after the end thereof the information data is transferred from said second storage unit to the backup device, based on controlling by said storage controller.

wherein if an instruction for backup is issued from said servers after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed up, and

wherein if differential data in said first storage unit remains to be backed up, then said storage controller reflects the differential data in said second storage unit and transfers backed up data from said second storage unit to said back-up device.

10. (original) A backup system as set forth in claim 9, wherein said servers have a first server for issuing the instruction for splitting and a second server for issuing the instruction for backup.

11. (currently amended) A backup system as set forth in claim 9, wherein information is transferred from said second storage unit to said backup device after copy of whole information-data from said first storage unit to said second storage unit ends.

12. (currently amended) A backup system comprising:
servers for storing information;
a first storage unit for storing information from said servers;
a second storage unit for copying the information stored in said first storage unit; and
a storage controller connected with said servers, said first storage unit, and said second storage unit and controlling said first and second storage units,
wherein when said storage controller receives an instruction for splitting from said servers, end of splitting is reported to said servers, an instruction for backup is received from said servers, then information is copied from said first storage unit into said second storage unit, and after the end thereof the information is transferred from said second storage unit to the backup device as set forth in claim 9, and
wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said second information is copied from said first storage unit into said second storage unit and then said first information and said second information are transferred from said second storage unit to said backup device.

13. (currently amended) A backup system comprising:
servers for storing information;
a first storage unit for storing information from said servers;
a second storage unit for copying the information stored in said first
storage unit; and
a storage controller connected with said servers, said first storage unit,
and said second storage unit and controlling said first and second storage
units,

wherein when said storage controller receives an instruction for
splitting from said servers, end of splitting is reported to said servers, an
instruction for backup is received from said servers, then information is copied
from said first storage unit into said second storage unit, and after the end
thereof the information is transferred from said second storage unit to the
backup device as set forth in claim 9, and

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is stored from said second storage unit into a memory that is connected with said storage controller and acts to store information and said second information is stored from said first storage unit, and then said first information and said second information stored in said memory are transferred to said backup device.

14. (currently amended) A storage system comprising:

a plurality of storage units; and

a storage controller for controlling said storage units;

wherein said storage units include first and second storage units;

wherein said storage controller has-comprises:

(a) a memory,

(b) a first control portion connected with said memory, accepting

splitting processing between said first and second storage units sent from a

first server, and reporting an end of the splitting to said first server before

completing of copying from said first storage unit to said second storage unit,

(c) a second control portion connected with said memory and accepting
backup processing sent from a second server after said report of the end of
the splitting during the copying from said first storage unit to said second
storage unit,

(d) a third control portion connected with said storage units and said
memory, and acting to copy information-data from said first storage unit to
said second storage unit, and

(e) a fourth control portion connected with said memory and
transferring information-data from said second storage unit to a backup device
after the end of copy of information-data from said first storage unit to said
second storage unit based on controlling by said storage controller,

wherein if an instruction for backup is issued from said second server
after the splitting, then said storage controller checks whether differential data
in said first storage unit remains to be backed up, and

wherein if differential data in said first storage unit remains to be
backed up, then said storage controller reflects the differential data in said

second storage unit and transfers backed up data from said second storage unit to said back-up device.

15. (currently amended) A storage system as set forth in claim 14, wherein information data is transferred from said second storage unit to said backup device after end of copy of whole information data from said first storage unit to said second storage unit.

16. (currently amended) A storage system comprising:
a plurality of storage units; and
a storage controller for controlling said storage units,
wherein said storage units include first and second storage units, and
wherein said storage controller comprises:
(a) a memory,
(b) a first control portion connected with said memory, accepting
splitting processing sent from a first server, and reporting end of splitting to
said first server,

(c) a second control portion connected with said memory and accepting
backup processing sent from a second server after said report of end of the
splitting,

(d) a third control portion connected with said storage units and said
memory, and acting to copy information from said first storage unit to said
second storage unit, and

(e) a fourth control portion connected with said memory and
transferring information from said second storage unit to a backup device after

end of copy of information from said first storage unit to said second storage unit
as set forth in claim 14,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into the second storage unit to the backup device, said second information is stored from said first storage unit into said second storage unit, and then said first information and said second information are transferred from said second storage unit to said backup device.

17. (currently amended) A storage system comprising:

a plurality of storage units; and

a storage controller for controlling said storage units,

wherein said storage units include first and second storage units, and

wherein said storage controller comprises:

(a) a memory,

(b) a first control portion connected with said memory, accepting
splitting processing sent from a first server, and reporting end of splitting to
said first server,

(c) a second control portion connected with said memory and accepting
backup processing sent from a second server after said report of end of the
splitting,

(d) a third control portion connected with said storage units and said
memory, and acting to copy information from said first storage unit to said
second storage unit, and

(e) a fourth control portion connected with said memory and
transferring information from said second storage unit to a backup device after
end of copy of information from said first storage unit to said second storage
unitas set forth in claim 14,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is stored from said second storage unit into ~~asaid~~ memory included in ~~connected with~~ said storage controller and acting to store information temporarily and said second information is stored from said first storage unit into said memory, and

wherein said first information and said second information stored in said memory are transferred to said backup device.